

**ADDRESSING CHLAMYDIA IN MIDDLE AGED AND OLDER WOMEN IN
RURAL AND NORTHERN BRITISH COLUMBIA**

by

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PROJECT SUBMITTED IN PARTIAL FULFILLMENT OF
THE REQUIREMENTS FOR THE DEGREE OF
MASTER OF SCIENCE
IN
NURSING FAMILY NURSE PRACTITIONER

UNIVERSITY OF NORTHERN BRITISH COLUMBIA

October 2014

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Abstract

The purpose of this literature review is to identify the ways in which nurse practitioners working in primary care can incorporate sexually transmitted infection (STI) screening as part of the well woman examination, especially among middle-aged and older women and Aboriginal women, in order to prevent long-term complications of undiagnosed STIs, such as pelvic inflammatory disease (PID) and an increased risk of acquiring HIV. An integrative literature review revealed that there is an abundance of research about STI screening for women under the age of 25. However, there is limited research about STI screening, prevention, and treatment among sexually active middle-aged and older women. Primary care providers can conduct screening and prevention practices for chlamydia and other STIs by normalizing STI screening with a nonjudgmental attitude. All primary care providers need further education about the increasing rates of chlamydia and other STIs in middle-aged and older women.

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Acknowledgement

I would like to thank Martha MacLeod, PhD, RN, Professor and UNBC Chair of the School of Nursing and Coordinator of Nursing Graduate Studies and Research, Kathryn Banks, PhD, MSN, RN, Assistant Professor, and Anna Shibata-Bojanczyk, BScN, MSN, NP-F, clinical faculty, for their continued dedication and support during my final year of graduate studies. This support has been integral to my success at UNBC.

I would also like to thank my friend, colleague, and classmate Farah Mackenzie for her continued support and encouragement during our studies. Many other supportive friends and family were integral to my success, and I am forever grateful for their ongoing encouragement over the years.

I would like to acknowledge my late grandfather, Cecil Andrew Smith, for encouraging me to pursue post-secondary education. I know that, without a doubt, were it not for his continued persistence I would not be the successful woman I am today.

Finally, I would also like to thank my daughter, Marcia McBride, who would not let me quit when I wanted to. Your strength and resilience comforts me.

I could not have done this without all of your support. Thank you everyone!

Chapter One: Introduction

Chlamydia trachomatis is a preventable sexually transmitted bacterial infection. Undiagnosed and untreated sexually transmitted infections (STIs) have serious reproductive concerns for women of childbearing age. This is especially the case with chlamydia because of possible complications: endometritis, salpingitis, pelvic inflammatory disease (PID), tubo-ovarian abscess, pelvic peritonitis, inflammation of the liver capsule and adjacent peritoneum (the Fitz-Hugh-Curtis syndrome), bacteremia, endocarditis, meningitis, and lymphogranuloma venereum procolitis (Workowski, 2013). Pelvic inflammatory disease in particular has serious long-term consequences that include chronic pelvic pain, tubal infertility, and ectopic pregnancy (Workowski, 2013). The sequelae of PID have the potential to be reduced through consistent primary and secondary screening, prevention, and education about how to prevent chlamydia infections (Rekart et al., 2013). While most of the current research is focused on the consequences of STIs for women of reproductive years, there is evidence that contracting PID can have long-lasting effects for women in the form of chronic pelvic pain and chronic diseases such as Reiter's Syndrome (Public Health Authority of Canada [PHAC], 2010a; PHAC, 2010b). Family nurse practitioners (FNPs) require a thorough understanding of best practice for the screening and prevention of chlamydia. Despite recommendations made in the *Canadian Guidelines on Sexually Transmitted Infections* (PHAC, 2010a) regarding screening at-risk groups and repeat screening of individuals with chlamydia infection after six months, infection rates continue to increase. Canadian and provincial statistics indicate that the rate of reported cases of chlamydia has increased over the last decade (British Columbia Centre for Disease Control [BCCDC], 2011; PHAC, 2010b). The research supports the need for primary prevention and reduction

of chlamydia cases in women, as chlamydia rates are 3.5% higher among women of reproductive age than for similarly aged men (Mylonas, 2012).

Middle-aged and older women are not being educated about prevention and risks of STIs. The lack of literature specific to middle-aged and older women and STI screening and prevention presents a problem for primary care practice providers. Current best practice guidelines that are available to primary care providers for the screening and prevention of STIs are specific to young women less than 25 years of age (Fang, Oliver, Jayaraman, & Wong, 2009; Idso, 2009; Minkin, 2010). Middle-aged women are overlooked or not screened for STIs due to lack of provider knowledge and skill, and because of embarrassment on the part of both providers and the women (Minkin, 2010).

Deering, Tyndall, and Koehoorn (2010) suggest that some STIs such as chlamydia are more prevalent in non-metropolitan areas. This phenomenon has been observed in British Columbia (BC), where rates in the Northern Health Authority have been exceeding the provincial average for the past ten years (Deering et al.). Residents of rural and remote regions are faced with barriers to STI testing and treatment, such as geographic inaccessibility, limited hours of operation of clinics, local societal views towards STI testing as negative, and negative interactions with local health care providers (Deering et al.). Due to the smaller populations in remote communities, anonymity is difficult to maintain for those seeking STI testing and treatment (Deering et al.). Health authorities in BC and agencies that provide health care services in these large and sparsely populated areas struggle to provide sexual health services (Deering et al.), in part due to challenges in recruiting and retaining primary health care providers in rural and remote areas (Snadden, 2008).

Hardwick and Patychuk (1999) argue that people living in areas that are considered socioeconomically disadvantaged have higher rates of STIs. The World Health Organization (WHO) reports that the social determinants of health are “the conditions in which people are born, grow, live, work and age” (WHO, 2011, para 1) and that these conditions are determined by the allocation of money, power, and resources at global, national, and local levels. Social determinants such as age, area of residence, sex, ethnicity, socioeconomic status, housing, and poverty have an impact on health disparities, disease prevention, and positive health outcomes (Hogben & Leichter, 2008). Among sexually active women of childbearing age, poor socioeconomic status is directly correlated with an increased risk of sexual violence and contracting STIs, cervical cancer, and HIV (Brooks Biello, Pettigrew, & Niccolai, 2011; Chacko, Wiemen, & Smith, 2004; Hardwick & Patychuk, 1999). If women have poor health during their reproductive years they may begin to experience chronic health conditions that continue into middle age and their older years. These chronic health conditions affect the women’s quality of life and require ongoing care through primary care providers, such as Family Nurse Practitioners.

There is a limited amount of research about how nurse practitioners (NPs) manage STIs. Nurse practitioners were introduced to the BC health care system in 2005 when the first class of NPs graduated (College of Registered Nurses of British Columbia [CRNBC], 2014). Many of the studies about primary care and STI screening, particularly chlamydia, have examined the care provided by general practitioners (GPs). As primary care practices often see patients with STIs, it is important to inform NPs about ways to manage the prevention and screening of STIs in middle-aged women, because this is a population that often gets overlooked in primary care.

The research evidence presented in this paper will help inform primary care practice, particularly the practice of FNPs, because FNPs provide primary care to women across the life span from adolescence to older adulthood. Due to the paucity of research, I will cautiously extrapolate findings from research that includes middle-aged males and females and postmenopausal women. I will make suggestions on how these findings can benefit middle-aged and Aboriginal women who live in rural and northern communities, as they are a key population for whom FNPs provide care.

According to Idso (2009), older women may not understand that they are potentially at risk for STIs. Prevention of STIs among women over the age of 50 may be determined by their awareness of the risks for STIs (Idso, 2009). Older adults have identified that there is a gap in primary care services; there is a lack of health care provider-led conversation about STIs in regards to the individual client's sexual health and sexual health screening (Slinkard & Wallace Kazer, 2011). During my literature search, it became evident that there is an abundance of research pertaining to sexually active adolescents and women of childbearing age, but there is a lack of research specific to STI prevention and middle-aged women, and none specifically for Aboriginal women.

The purpose of this literature review is to identify the ways in which NPs working in primary care can incorporate STI screening as part of the well woman examination, especially among older women and older Aboriginal women, in order to prevent long-term complications of undiagnosed STIs, such as PID, and an increased risk of acquiring HIV. The questions that will be examined are:

- 1) How can the family nurse practitioner (FNP) incorporate STI screening for all women living in rural and remote communities in British Columbia, as a core

service that is part of the well woman exam in primary care, to prevent long-term complications of STIs?

- 2) How can the FNP improve STI screening for middle-aged and older women who are no longer concerned with birth control, but still sexually active?

This project is laid out in five chapters. Chapter Two discusses the background, need for, and importance of this project. Chapter Three outlines the search methods undertaken for this project. Chapter Four is an analysis of the literature and findings. Chapter Five provides the discussion, conclusions, and recommendations for practice, education, and research.

Chapter Two: Background and Context

This chapter begins with an examination of the populations at risk for STIs, including sexually active adolescents and young women, women of childbearing age, and middle-aged and older women who are still sexually active. Particular attention will be given to the unique risk factors for Aboriginal women, because Aboriginal women are a group of people that face unique social, political, economic, and historical factors that influence health care encounters on both individual and institutional levels (Browne & Fiske, 2001). Background information about epidemiology, pathophysiology, and morbidity, such as tubal factor infertility, pelvic inflammatory disease (PID), and ectopic pregnancy will be presented. Current evidence-based standards of practice for diagnosis, management and treatment, partner notification, and follow-up care will be reviewed. Finally, diagnosis and treatment guidelines from British Columbia, Canada, and the United States will be analyzed and compared.

Populations at Risk for STIs

As noted by Deering et al. (2010), STIs have been particularly prevalent in urban areas in Canada; their recent research indicates that some STIs are now becoming more prevalent in non-metropolitan areas. This is especially significant in BC, where STI rates are increasing, mainly in the northern health regions where rates have been exceeding the provincial average over the past several years (Deering et al.). Deering et al. also note that being female and between the ages of 25 and 49 are significantly associated with previously having had an STI, and not using a condom during their last sexual encounter.

The increasing rate of STIs in northern BC communities is, in part, due to the increase in industrial camps that include forestry, oil and gas, and mining camps (Northern Health, 2012; Shandro, Veiga, Shoveller, Scoble, & Koehoorn, 2011). These camps are often located close to host or neighbouring communities. The transiency of the workers, mixed with factors such as illicit drug and alcohol binging, and camp workers engaging in unprotected sex with multiple, concurrent partners, are strongly linked to increasing rates of STIs in northern communities (Goldenberg, Shoveller, Ostry, & Koehoorn, 2008). Other research has identified that transient males, such as mining or oil camp workers, engage in high risk, unprotected sex with female sex workers (FSW) (Patterson et al., 2012). These men then return home to their wives or significant partners and potentially expose them to HIV and other STIs (Patterson et al.). These studies highlight areas of changing sexual practices that NPs need to consider in planning care for the people in rural and remote communities, in particular women.

The correlation between older age and not using a condom is significant in northern non-metropolitan areas (Deering et al., 2010). While the rates of chlamydia diagnosis in middle-aged and older women are not nearly as high as among women under 25 years of age, the lack of education and prevention of STIs provided to the middle-aged population may be detrimental to their sexual health as they age, especially given the increased rates of STIs being diagnosed in middle-aged men (Deering et al.). The newly single middle-aged woman may be at particular risk for an STI diagnosis and associated consequences.

According to Fang et al. (2009), STI rates have increased by 165.9% among adults aged 40–59 during the period 1997–2007 in Canada. Of special interest is that middle-aged men as a cohort represented the most significant increases in diagnosis of chlamydia,

gonorrhea, and infectious syphilis, making up 59.8%, 87.6% and 93%, respectively, of middle-aged adult cases in 2007 (Fang et al.). It is beyond the scope of this literature review to ascertain why there is such a high prevalence of STIs in the middle-aged male population. Further research is required to investigate why there has been an increase, and how this may affect middle-aged women.

Sutherns, McPhedran, and Haworth-Brockman's (2004) national study of rural, remote and northern women's health found that women who live in rural areas do not have appropriate access to primary health care, and they require health care practitioners who are able to deliver primary care specific to rural women's health care needs. The authors go on to say that women who live in rural places have limited access to women-centred care. This in turn forces women to have to travel great distances to obtain health services. Women-centred care is described as when practitioners listen to women and girls describe their needs in their own way and in their own voice, based on the womens'/girls' knowledge of their own bodies and realities (Vancouver Coastal Health Women's Health Committee, 2009). Sutherns et al.'s findings support the notion that family nurse practitioners (FNPs) are in a prime position to meet the health care needs of women living in rural and remote areas of Canada.

Epidemiology of Chlamydia

Chlamydia trachomatis is a gram-negative bacterium and is a sexually transmitted infection caused by serovars D to K (PHAC, 2010a). It is thought to be the most prevalent STI worldwide (World Health Organization [WHO], 2011). The World Health Organization estimates that in 2005 there were 101 million new and 98 million prevalent cases of chlamydia infection (WHO, 2011). The typical incubation period, from the time of exposure to the start of symptoms is about 2–3 weeks, but can be as long as 6 weeks (PHAC, 2010a).

Chlamydia is transmitted through oral, anal, or vaginal sex. Chlamydia is referred to as a “silent infection” as up to 70% of cases are asymptomatic (Balfe et al., 2010).

According to the Centers for Disease Control and Prevention (CDCP), chlamydia rates in the United States for the period 1998–2007 in women aged 15–24 years of age increased from 383.2 per 100,000 in 1998 to 5952.7 per 100,000 in 2007; this is a 1453.4% increase (CDCP, 1999; CDCP, 2009). In British Columbia, chlamydia rates among young adults aged 15–29 increased 201% between 1997 and 2007, from 2506.5 per 100,000 to 5262.7 per 100,000 (3309 to 9961 cases) compared to an increase of 323% from 32.3 per 100,000 to 105 per 100,000 (166 to 703 cases) among adults aged 40–59 (BCCDC, 1997; BCCDC, 2007b). Increased rates have been observed in most Health Service Delivery Areas (HSDAs) of BC, but the most notable and greatest increase was in the Northern Interior (409.1 per 100,000; 588 cases) and Northwestern BC (324 per 100,000; 250 cases) HSDAs of the Northern Health Authority (BCCDC, 2008).

Rekart et al. (2013) report that chlamydia infection rates initially declined from 1993 to 1996 but subsequently increased from 1997 to 2007 for females aged 15–44 years in North America, the United Kingdom, Australia, Scandinavia, and Europe. In Canada, 15–29-year-olds make up the majority of individuals diagnosed chlamydia cases. However, diagnosis of chlamydia and other STIs (gonorrhea and infectious syphilis) has increased among the middle-aged population (Fang et al., 2009). In Canada between 1997 and 2007 there was an 86.8% increase, or from 466.6 to 871.6 cases per 100,000 (28,778 to 58,771) among young adults aged 15–29, compared to a 165.9% increase, from 12.9 per 100,000 to 34.6 per 100,000 (997 to 3387 cases) among adults aged 40–59 (Fang et al.). While the number of

cases for middle-aged adults is lower than for young adults, the numbers are still high enough to warrant primary care services to be designed for this specific portion of the population.

In British Columbia, nucleic acid amplification testing (NAAT) was the main method of testing for chlamydia during the 1997 to 2007 period (Rekart et al., 2013). The Public Health Agency of Canada (PHAC, 2010b) proposes that some of the potential risk factors for increasing rates of STIs such as chlamydia, gonorrhoea, and infectious syphilis may be attributable to factors such as the introduction of NAAT 1997, the development of safer-sex education burnout, less-than-optimal awareness of risk-reduction behaviours among youth, earlier onset of sexual intercourse, and a high rate of serially monogamous relationships from a young age. Other contributing factors include sexual activity continuing later in life, the physiological transmission of STIs not being well understood by the public, the increasing links of party drugs such as crystal meth and ecstasy to unsafe sexual behaviours, and the increase in anonymous sexual encounters arranged through the internet (PHAC, 2010b).

Pathophysiology. According to Mylonas (2012), “All chlamydial microbes are immobile, gram-negative bacteria that undergo two phases of reproduction: an intracellular phase of non-infectious reticular bodies (RBs) and an extracellular phase of infectious elementary bodies (EBs)” (p. 1272). The chlamydia bacteria can stay in host cells in a viable, yet culture-negative state (Mylonas, 2012). Otherwise known as chlamydial persistence, chlamydia is potentially in an atypical, intracellular, and metabolically less active state that is challenging to resolve by the host-defence system and by antibiotic therapy (Mpiga & Ravaorinoro, 2006). Of importance to note, Mylonas (2012) reports that the superficial columnar cervical epithelial cells are the most common sites of infection in females. Mylonas

(2012) further suggests that natural immunity to the bacterium is limited, because reinfection is quite common.

Symptoms of chlamydia. Chlamydia is the most commonly reported bacterial STI in Canada. Although the infection is usually asymptomatic, the most frequently reported symptoms in women include a vaginal discharge, a burning sensation when urinating, pain in the lower abdomen, abnormal vaginal bleeding, inflammation of the lining of the rectum, and painful intercourse (PHAC, 2010a). Chlamydia can also cause dysuria-pyuria syndrome, characterized by painful urination combined with presence of white blood cells in the urine, which can mimic cystitis (Workowski, 2013).

When left untreated or undiagnosed, chlamydia infection can lead to PID and cause reproductive complications, such as infertility and ectopic pregnancy, and chronic pelvic pain (Balfe et al., 2010; Carey & Beagley, 2010; Piepert, 2003). Chlamydia is largely an asymptomatic STI, so this makes it very important for the primary care provider to do a thorough sexual health assessment on all sexually active women (Carey & Beagley, 2010; Minkin, 2010). This does not necessarily mean screening every single woman, but it does mean enhanced screening and then testing if needed. Consequently, NPs need information to guide their decision making about which clients to offer screening.

Diagnostic testing. Diagnosis of chlamydia has evolved as laboratory technologies have advanced. Chlamydia may be diagnosed in the laboratory using culture, microscopy, antigen detection, nucleic acid detection, serology, and surrogate markers (PHAC, 2010a). Nucleic acid amplification tests (NAATs) are the most sensitive and specific and should be used whenever possible for urine, urethral, and cervical specimens (PHAC, 2010a).

Susceptibility to chlamydia. Women who are past their childbearing years have

different physiological risk factors than their younger female counterparts, due to the changes that occur with aging. Physiologically, middle-aged women are more susceptible to STIs because the thinning of the vaginal mucosa and vaginal dryness can enable the transmission of STIs (Idso, 2009). All women have a larger mucosal surface that is exposed to seminal fluid, thus increasing the likelihood of STI acquisition occurring in male-to-female compared to female-to-male transmission (Idso, 2009). Many risk factors increase the likelihood of STIs in older populations: (a) an increased number of sexual partners due to longevity, (b) improvements in medication and health care technology, (c) better health, (d) higher rates of divorce, (e) primary health care providers' lack of awareness about expression of an individual's sexuality and participation in sexual activity by older women and men, (f) STI prevention and health promotion programs that are predominately aimed at younger women, and (g) the increased use of erectile dysfunction medications (Poynten, Grulich, & Templeton, 2013).

Schensul, Levy, and Disch (1999) report that the general lack of knowledge about STIs in the older population puts this population at risk for STIs, because only 16% of adults over the age of 50 report that they are likely to use condoms. This supports the need for health education and prevention practices to be directed to assisting this group to address their sexual health needs. Poynten et al. (2013) question whether the increase in STI diagnoses in the older population is due to an actual increase or if diagnoses are increasing because of a demand by middle-aged women and men for testing. There are few studies about whether the sexual risk behaviours in older adults have changed over time (Poynten et al.). Further research about STI prevention practices, education, and screening practices by

primary care providers would be beneficial in understanding how adults older than 50 years of age view their risks for STIs.

Men. Identifying barriers to prevention practices and screening infected men are also important in order to ensure that adequate screening, treatment, and prevention strategies are supported and carried out by practitioners in primary care settings (PHAC, 2010a). When screening is focused on sexually active women under the age of 25, screening and treatment programs will not effectively reduce the overall prevalence of chlamydia because men (of all ages) will continue to be infected and untreated (Fung, Scott, Kent, & Klausner, 2007). It is plausible that this one-sided approach, with a lack of routine testing of males, may be a contributing factor to the increasing rates of chlamydial infection in Canada.

Management and treatment of chlamydia. Management of chlamydia is indicated when there is a positive chlamydia test. Diagnosis of a syndrome compatible with a chlamydia infection is made without waiting for the chlamydia test results, or if a sexual partner is diagnosed with chlamydia. As well, co-treatment is indicated when there is a diagnosis of *Neisseria gonorrhea*, without waiting for the chlamydia test results, due to the 20% to 42% likelihood of co-infection with chlamydia and gonorrhea (PHAC, 2010a). The *Canadian Guidelines on Sexually Transmitted Infections* (PHAC, 2010a) preferred treatment choice is Doxycycline 100 mg orally twice a day for 7 days, or if poor compliance is expected, Azithromycin 1 g orally in a single dose. Alternative treatment options include Ofloxacin 300 mg orally twice a day for 7 days or Erythromycin 2 g/day orally in divided doses for 7 days, or Erythromycin 1 g/day orally in divided doses for 14 days (PHAC, 2010a). The *British Columbia Treatment Guidelines for Sexually Transmitted Infections in Adolescents and Adults* (BCCDC, 2007a) recommends the same treatment as the Public

Health Agency of Canada for primary treatment. The United States Preventative Services Task Force (USPSTF) refers to the Centers for Disease Control and Prevention (CDCP) *Sexually Transmitted Diseases Treatment Guidelines* (CDCP, 2010) for treatment of chlamydia. Recommended treatment by the CDCP is the same as the PHAC and the *BC Treatment Guidelines*.

The *BC Guidelines* (BCCDC, 2007a) and CDCP (2010) alternate treatment methods differ from the *PHAC Guidelines* (PHAC, 2010a). The *BC Guidelines* alternate treatment is Erythromycin base 2 g/day orally in divided doses for 7 days, or Erythromycin base 1 g/day orally in divided doses for 14 days, or Azithromycin 1 g orally in a single dose. The CDCP *Guidelines* (2010) contain more alternate treatment choices, particularly for pregnant women: Erythromycin base 500 mg orally 4 times a day for 7 days, or Erythromycin Ethylsuccinate 800 mg orally 4 times a day for 7 days. There are other choices for clients allergic to Doxycycline or Erythromycin: Levofloxacin 500 mg orally once daily for 7 days or Ofloxacin 300 mg orally twice daily for 7 days. These alternate forms of treatment are important for those allergic to Doxycycline, but also because as of June 2014 there continues to be a shortage of Doxycycline due to supply and demand (Chandramouli, 2014). This could potentially have a profound impact on the treatment of chlamydia. It is beyond the scope of this paper to address the shortage of Doxycycline and future research may be beneficial to explore the outcomes of treatment of chlamydia with alternative methods.

Management and treatment of chlamydia in pregnant women and nursing mothers. According to the CDCP *Guidelines* (2010), Doxycycline and quinolones are contraindicated in pregnancy and for women who are breastfeeding. For urethral, endocervical, and rectal infections the administration of one of the following is

recommended: Amoxicillin 500 mg orally 3 times a day for 7 days; Erythromycin 2g/day orally in divided doses for 7 days or 1 g/day orally divided doses for 14 days; or Azithromycin 1g orally in a single dose, if poor compliance is expected.

Management and treatment of chlamydia in older women. Research has not addressed whether treatment would be different for older women with potentially co-morbid medical conditions. Further research is needed to address optimal prescribing practices.

Reporting and partner notification. According to the *Venereal Disease Act* and the *Health Act* of BC, physicians and laboratories must report chlamydia infections to local public health authorities (BCCDC, 2011; PHAC, 2010a). All sexual partners who have had sexual contact with the affected individual within 60 days prior to symptom onset, or date of diagnosis and are asymptomatic should be tested and treated. If the identified person reports having no sexual partners in this period, then the last known partner should be tested and treated (PHAC, 2010a). Contact tracing of industrial camp workers in northern BC can be difficult, because of the transiency of the workers (Goldenberg et al., 2008). All parties need to be treated, for example, an infected mother, her infected newborn, and her current and/or recent sexual partner(s) should be offered treatment. Persons who are implicated in sexual abuse cases must be located, clinically evaluated, and treated (PHAC, 2010a). The primary care provider can access the local public health authority to assist with partner notification and help with making the appropriate referral for clinical evaluation, testing, treatment, and health education. According to the BC provincial guidelines, if there is limited or no public health authority support then partner notification priority should be aimed at youth/young adults less than 25 years of age (PHAC, 2010a).

Follow-up. Routinely, a test for cure is not indicated if the recommended treatment is taken as prescribed, the signs and symptoms disappear, and there has been no re-exposure to an untreated partner; except where compliance is suboptimal (PHAC, 2010a). Compliance to treatment in rural and northern populations may be of concern due to barriers such as geographic inaccessibility and limited hours of operation of clinics. The need to offer a test for cure is greater in these communities (Deering et al., 2010).

Issues for Childbearing Women

Chlamydia has disturbing sequelae on the female reproductive system, including ectopic pregnancy, chronic pelvic pain, permanent sterility, increased risk of HIV infection, and PID (Health Canada, 2004; McKay, 2006). Recurrent or multiple chlamydia infections increase the likelihood and consequences of: (a) ectopic pregnancy (2–4.5 fold and 4.5–6.4 fold increase, respectively); (b) infertility; and (c) the risk of developing PID (Carey & Beagley, 2010). Brunham and Peeling (1994) report that persistent exposure to chlamydia (i.e. untreated or undiagnosed chlamydia) can cause chronic inflammation of the female reproductive tract, which in turn causes tissue damage to the reproductive tract and increases the likelihood of reproductive complications for women of childbearing age. This makes chlamydia screening and re-screening even more important for women who are of childbearing age, because without proper diagnosis and treatment unnecessary reproductive organ damage may occur.

Despite the implementation of chlamydia screening programs, chlamydia infection rates are not decreasing significantly (Deering et al., 2010). Chlamydia screening programs were established mainly to provide screening for asymptomatic, prevalent infection in sexually active young women less than 25 years of age (Gottlieb, Martin, Xu, Byrne, &

Brunham, 2010). The underlying assumption behind these secondary prevention programs is that early identification and treatment of chlamydia infections will reduce the incidence of tubal inflammation and damage. Moreover, it is believed that the number of new reported cases of chlamydia and their associated sequelae can be reduced through primary prevention in reducing the transmission of chlamydia in the general population (Gottlieb et al., 2010).

Risk factors linked to chlamydia in pregnancy. Chlamydia screening during pregnancy is highly beneficial as it allows for: (a) early detection and treatment of infection; (b) prevention of maternal complications; and (c) prevention of vertical transmission from the mother to the fetus and subsequent neonatal disease (Adler, 2012). In pregnancy, untreated chlamydia infection has been linked to harmful maternal and neonatal outcomes, including increased likelihood of miscarriage, postpartum endometriosis, premature rupture of the membranes and pre-term labour, low birth weight, and spread of infection during delivery to the neonate and subsequent conjunctivitis and pneumonitis (Blardia et al., 2010). According to the PHAC (2010a), 50% of infants born vaginally to mothers with chlamydia will be infected through vertical transmission, which can occur even with caesarean section when the membranes are intact. In addition, of those neonates who acquire infection during labour and birth, at least 20% develop conjunctivitis and 20% develop pneumonia (PHAC, 2010a).

Current best practice guidelines in Canada are that any woman who is pregnant, no matter her age, is screened for chlamydia, gonorrhea, syphilis, and HIV (PHAC, 2010a). This screening measure is meant to prevent adverse pregnancy outcomes such as uncomplicated chlamydia cervicitis, sporadic and recurrent miscarriage, preterm labour, premature rupture

of the membranes, low birth weight, and transmission of HIV (Land, Van Bergen, Morre, & Postma, 2009).

Tubal factor infertility. One of the leading global causes of tubal factor infertility (TFI) is infection of the female reproductive tract with chlamydia (Hajikhani et al., 2012). Ten to 20% of female infertility is associated with TFI and even though an infection with chlamydia usually clears in most women, infection can persist in some (Hajikhani et al., 2012). Price et al. (2012) estimate that 45% of TFI cases have been caused by chlamydia infection, this estimate warrants primary care providers to be more diligent in teaching prevention strategies, screening, diagnosis, and timely treatment of chlamydia infections to reduce a woman's risk of infertility.

Clinical diagnosis of TFI requires that the woman has damaged or occluded fallopian tubes and/or has a history of salpingectomy (Hafner & Pelzer, 2011). A single chlamydial infection does not result in tubal scarring, but prolonged exposure to chlamydia due to an ongoing persistent infection or reinfection has been associated with “1) an autoimmune response to chlamydial heat shock protein and 2) the chronic inflammation associated with tubal factor infertility” (Hafner & Pelzer, 2011, p. 19). Scarring of the fallopian tubes is a result of the severe inflammatory response from repeated infections that causes inflammation, tissue damage, and scarring (Hafner & Pelzer, 2011).

As stated earlier, chlamydia is a silent infection that is often asymptomatic and women can be infected with chlamydia and not be aware of it. This lack of awareness and diagnosis puts women of childbearing age at risk for TFI, which can cause emotional distress for women who are trying to become pregnant.

Pelvic inflammatory disease. Pelvic inflammatory disease (PID) is a polymicrobial infection of the upper genital tract involving any combination of the endometrium, fallopian tubes, pelvic peritoneum, and contiguous structures, affecting primarily young, sexually active women. Pelvic inflammatory disease is diagnosed by the clinical symptoms the woman presents with when examined by a primary health care provider (Gradison, 2012; PHAC, 2010b). Pelvic inflammatory disease is caused by multiple organisms: *C. trachomatis* and *N. gonorrhea*, endogenous flora (anaerobic, aerobic, or both)—i.e., *E. coli*, *Staphylococcus*, *Enterococcus*, *Bacteroides*, *Peptostreptococcus*, *H. influenzae*, and *G. vaginalis* (Matei, Seto, & Zhang, 2012). It is estimated that 10–20% of women with chlamydial infections may develop PID if not treated (Gradison, 2012). Up to two thirds of cases go unrecognized, yet there are approximately 100,000 symptomatic cases reported annually in Canada (PHAC, 2010b). The Public Health Agency of Canada (2010b) estimates that 10–15% of women of reproductive age have had one episode of PID and that in jurisdictions with long-standing chlamydia control programs, PID rates and ectopic pregnancy rates have declined.

Ectopic pregnancy. A normal pregnancy begins with a fertilized egg that attaches itself to the lining of the uterus, but an ectopic pregnancy occurs when the fertilized egg implants itself outside of the uterus (Varney, Kriebs, & Geger, 2004). Typically, implantation in an ectopic pregnancy occurs early in a fallopian tube, rather than in the uterus. Patency of the fallopian tubes is important in order for the fertilized egg to be carried to the uterus. Other sites of implantation include the abdominal cavity, the ovary, or the neck of the uterus (Varney et al., 2004). Pelvic infections from previous or untreated chlamydia infections and other STIs can predispose women to ectopic pregnancies due to tubal scarring

(PHAC, 2010a). Other factors that may increase a woman's risk for ectopic pregnancy include previous ectopic pregnancies, intrauterine contraceptive devices, and prior tubal surgery (Varney et al., 2004).

According to Varney et al. (2004), tubal pregnancies account for 95% or more of ectopic pregnancies. An ectopic pregnancy can erupt without warning or the woman even knowing that she is pregnant. Tubal pregnancies are life threatening if not diagnosed promptly; the resultant internal bleeding can lead to hypotension and signs of shock that may develop suddenly. According to PHAC (2010a), ectopic pregnancy is the primary cause of maternal death in the first trimester, and notably 20% to 60% of ectopic pregnancies lead to permanent sterility. Chlamydia infection also increases the likelihood of HIV infection when a person is exposed to HIV (McKay, 2006). This makes screening and prevention of chlamydia infections important for pregnant women.

Rekart et al. (2013) report that population-based rates of inpatient, outpatient, and total ectopic pregnancies declined from 1992 to 2003 but have increased significantly since then. Notably, chlamydia infection rates had increased during the period 1997 to 2007 (Rekart et al.). The hypothesis of the correlation between chlamydia infection or repeated infection and ectopic pregnancy is plausible. Further research is required to support this hypothesis.

In summary, tubal factor infertility, pelvic inflammatory disease, and ectopic pregnancy are significant negative reproductive and genitourinary, and inflammatory responses that result from untreated chlamydial infections (Carter et al., 2012; Gradison, 2012; Hafner & Pelzer, 2011; PHAC, 2010a; Rekart et al., 2013). The problem is that we do not have information about whether the infection has been undetected for long periods of

time due to lack of screening, or if middle-aged and older women are being exposed to new infections by their male partners, some of whom may have been working out of town in work camps and have had sexual relationships with women other than their wives or long-term partners. These negative outcomes have the potential to be minimized through adequate primary and secondary screening.

Issues for Middle-Aged and Older Women

According to Idso (2009), the newly single older woman is not currently considered at risk for STIs. However, older women are concerned about sexuality and the potential health risks of STIs, but lack knowledge about where to access this form of health care. Sexually transmitted infection prevention programs have been aimed towards women less than 25 years of age. Older women and their health care providers are ill prepared for clinical communication about sexual issues (Idso, 2009). Older women often lack the requisite skills or knowledge to ask about STI screening, testing, prevention, and education (Idso, 2009). As women age they may experience less vaginal lubrication and this can cause vaginal mucosa to be fragile, therefore making the transmission of viruses and bacteria easier (Idso, 2009).

Education for older women about STIs such as chlamydia and practices to prevent them is an area where there are gaps in prevention, screening strategies, and research. A lack of service puts older women at risk of exposure to chlamydia and other STIs. There is little research on how older women communicate with their physicians or nurse practitioners about their sexual health (Maes & Louis, 2011; Tessler Lindau, Leitsch, Lundberg, & Jerome, 2006). Additionally there is sparse research on whether older people use condoms or do not view themselves as needing to practice safe sex (Deering et al., 2010). Farrell and Belza

(2012) maintain that there is a need for safe sex education for older populations, because ignoring the topic of sexual health in the older population is doing them a disservice.

Women who are in their 60s and 70s today came of age during the sexual revolution in the 1960s, when the traditional norms of sexual behaviour were being challenged (“Sex and the older woman,” 2012). These challenges included intercourse outside of monogamous, heterosexual relationships or marriage and the idea that sex without the intent of procreation was fun and a form of personal expression (Mageland & Findley, 2013). Furthermore, the newly single older woman who has been in a committed relationship for many years may not know about STIs. This means that when exploring new sexual partnerships, a woman may not use or know to employ safe sex behaviours. Idso (2009) believes this is where the advanced practice nurse (APN) must use critical assessment and communication skills to foresee and identify older women at risk for STIs. Based on the literature there is a need to create clinical practice guidelines and resources to support NPs in addressing the sexual health needs of older women.

The prevention of STIs among middle-aged and older women is contingent on their awareness of the risks. Advanced practice nursing interventions start with a comprehensive health assessment, history taking, including sexual health history, social and relationship history, and identifying the woman’s risks, which will then direct patient education and counselling needs (Idso, 2009). As identified in the literature, a non-judgmental, honest, and open attitude during the interview will assist the provider in helping the woman to understand her risks.

Reiter’s syndrome. Reiter’s syndrome is a form of reactive arthritis that occurs within 1–6 weeks after the patient is exposed to one of a panel of triggering bacterial

organisms, including *Chlamydia trachomatis* and can affect women of all ages (Carter, Gerard, Whittum-Hudson, & Hudson, 2012). Patients develop an inflammatory response of arthritis that involves peripheral joints, particularly the sacroiliac joints; the arthritis usually affects the large joints of the lower extremities (Carter et al., 2012). It is beyond the scope of this literature review to address this chronic disease in detail. However, the link between Reiter's syndrome and chlamydia is evident and abundant (Carter et al., 2012). When a middle-aged woman presents to her primary care provider with low back pain and joint pain, Reiter's syndrome is a possible differential diagnosis, if the woman has an undiagnosed and untreated *Chlamydia* infection.

Considerations influencing increased STIs in older women. Divorce, separation, and widowhood place many unprepared middle-aged women back into the dating scene and into new partner sexual relationships (Idso, 2009). The study of STIs in middle-aged women is a relatively new area of interest. Recent studies have shown an increase in Human Papilloma Virus (HPV), Herpes Simplex Virus (HSV), chlamydia, and gonorrhea infections in this population (Idso, 2009). Additionally, with the introduction of Viagra in 1988, both men and women in mid-life have been given new opportunities for increased sexual activity and consequently increased risks for contracting STIs (Poynten et al., 2013). According to Minkin (2010), because the risk of unintended pregnancies is relatively low for middle-aged women there is less incentive for the use of barrier methods such as condoms.

When a young woman visits the doctor for contraception the discussion includes STI prevention, safer sexual practices, and contraceptive methods (Idso, 2009). This means that health care providers have opportunities to counsel and screen young women for STIs. However, their older counterparts who are no longer concerned about birth control, due to

tubal ligation, menopause or hysterectomy, may not be screened appropriately due to lack of provider knowledge about older women continuing to be sexually active (Idso, 2009). Lack of provider knowledge is of concern, as studies have discovered that women remain sexually active from young adulthood through mid-life and into the postmenopausal phase of life (Sherman, Harvey, & Noell, 2005).

Aboriginal Women

Aboriginal women of Canada represent a sub-group in which chlamydia infection can affect reproductive health. This group of women, in particular, requires a primary care provider that is culturally competent and sensitive. The Society of Obstetricians and Gynecologists of Canada (SOGC) (2011) affirm that protecting and promoting the sexual and reproductive rights of Aboriginal women requires an understanding of their barriers to health and well-being, such as access to culturally safe care. According to SOGC (2011), “Aboriginal women experience an unreasonably high rate of STIs, reproductive tract infections, high-risk pregnancies, complicated and pre-term deliveries, maternal mortality, teenage pregnancies, and sexual violence” (p. 634). The SOGC suggests that poor health outcomes in Aboriginal women are worsened by inadequate access to health and social services, which is a consequence of historical and continuing forms of colonization that include structural barriers, racist and oppressive policies, limiting non-insured health benefit policies, and multifaceted social determinants of health. The number of NPs offering primary health care services to rural and remote communities in British Columbia is increasing. Many of these primary care services are being offered on reserves or in association with Band Councils and the First Nations Health Authority (FNHA, 2013). Nurse practitioners are not currently employed by FNHA, because FNHA is the first of its kind in Canada where health

services are being transferred from federal jurisdiction (formally known in BC as First Nations Inuit Health Branch [FNIHB] to provincial jurisdiction (FNHA, 2013). Nurse practitioners do work closely with First Nations communities in BC through the other five BC health authorities.

Culturally competent care. The Canadian Nurses Association (CNA, 2010) suggests that cultural competence is a set of consistent behaviours, attitudes, and policies organized within a system, agency, or among professionals, which enables nurses to work in an effective manner in cross-cultural situations. Culturally competent care leads to better health outcomes for clients, nurses, and health systems.

Douglas et al. (2011) define the framework of culturally competent care from a social justice perspective that all individuals and groups are entitled to fair and equitable rights to actively participate in social, educational, economic, and health care opportunities. Through application of the principles of social justice and facilitating culturally competent care, the disparity in health outcomes can potentially be reduced (Douglas et al.). However, this can be challenging for a primary care provider who has no experience or knowledge of working with Aboriginal communities.

Historically, health care encounters between Aboriginal people and non-Aboriginal providers have, unfortunately, been affected by ingrained racial stereotyping, particularly on the part of those living in small, isolated communities (Waldram, Herring, & Young, 2007). Culturally competent care includes an understanding of the culture one is working with. For health care providers working with Aboriginal people, this includes being considerate of cultural, emotional, and spiritual aspects of Aboriginal peoples' experiences and beliefs about health and health care (Birch, Ruttan, Muth, & Bayadala, 2009).

In Browne and Fiske's (2001) study of First Nations women's experiences, the authors identified six negative themes of First Nations women's experiences with mainstream health care: 1) dismissal by health care provider; 2) transforming one's self to gain credibility, i.e. changing one's appearance and behaviour; 3) negative stereotypes about First Nations women; 4) marginalization from the mainstream; 5) situations of vulnerability; and 6) disregard for personal circumstances, e.g. being charged for missed appointments without regard to personal circumstances such as finances and travel. These experiences display how First Nations women were made to feel trivial, vulnerable, and disregarded for personal circumstances beyond their control.

In contrast to these negative experiences, the women in the study also identified positive encounters, which included: 1) being able to actively participate in health care decisions with their health care providers; 2) receiving exceptional care that conveyed caring attitudes; 3) being supported by health care providers with regards to the women's personal and cultural identity; and 4) establishing and developing positive and long-term relationships with their health care provider (Browne & Fiske, 2001). The positive and negative findings from Browne and Fiske's (2001) study can inform primary care providers about ways to improve service delivery, access, and positive outcomes for Aboriginal women.

Effects of historical trauma. Palacious and Portillo (2009) speculate that historical trauma can affect the health and well-being of Aboriginal women. Historical trauma is defined as "cumulative emotional and psychological wounding over the lifespan and across generations emanating from massive group experiences" (Palacious & Portillo, 2009, p. 17). Historical trauma concepts include unresolved grief and intergenerational transmission of psychological symptoms. The authors suggest that when several generations of Aboriginal

populations are traumatized, families and communities can be predisposed to repeating the trauma (Palacios & Portillo). Colonization has led to Aboriginal women being objectified, disrespected, and ignored (Wilson et al., 2013). Thus, Aboriginal women have lost their voices and powers within their communities, particularly their role in promoting traditional health and education (Wilson et al.).

Nurse Practitioners

NPs work within a scope of practice where they have the legislative authority to prescribe, diagnose and manage chronic diseases and STIs, provide education and prevention strategies, and make referrals to specialists when appropriate (College of Registered Nurses of British Columbia [CRNBC], 2014). Registered nurses (RNs) in BC who have completed a certification program in reproductive health that is approved by the College of Registered Nurses of British Columbia are also capable of diagnosing and treating STIs, but they do not have prescriptive authority. Registered nurses with certifications in reproductive health and remote nursing practice education are not fully prepared to be primary care providers. When the care is beyond the scope of a certified practice nurse, the certified practice nurse is required to seek direction or orders from a physician or nurse practitioner (CRNBC, 2014). In primary care there is an opportunity for NPs and community health nurses (CHNs) with the certification to provide educational programs for women about how their sexual lives change as they age.

The role of the nurse practitioner. The primary health care nurse practitioner (PHCNP), also known as the family nurse practitioner (FNP) or all-ages nurse practitioner, is the most rapidly growing advanced practice nursing role in Canada (Donald et al., 2010). Nurse practitioners (NPs) have the potential to increase access and quality of primary care

services for the Canadian population. Family nurse practitioners are educated to provide health care services to individuals and families from infancy to death and are able to work in a variety of community-based settings (Donald et al., 2010). This is of particular importance for Canadians living in rural and remote parts of Canada, where they may be underserved by primary care providers.

Primary health care in rural and remote regions of Canada. In Canada, more than 19% of the population—over six million people—live in rural areas, and rural areas make up 95% of the land mass (Statistics Canada, 2011). Rural areas tend to have higher disability rates, shorter life expectancy, higher infant mortality rates, higher rates of circulatory and respiratory disease, diabetes, and suicide, and higher death rates due to accidents (Desmeules, Pong, Legace, Heng & Manuel, 2006). The health status of people living in rural and remote areas of Canada is negatively impacted by the challenges of low income, poverty, lower levels of education, and higher rates of unemployment, and this makes for poorer quality of life and poorer health outcomes than their urban counterparts (Desmeules et al., 2006). The Romanow Report (Romanow, 2002), a ground-breaking report on the Canadian health care system, states:

people in rural and remote communities have poorer health status than Canadians who live in larger centres. Access to healthcare also is a problem, not only because of distances, but because these communities struggle to attract and keep nurses, doctors and other healthcare providers. (p. 159)

Nurse practitioners use evidence-based practice with an approach that puts emphasis on health promotion and partnership development; NPs do not replace other health care providers, but rather complement the health care system (Donald et al., 2010). Nurse

practitioners are thus in a good position to provide primary health care services to women living in rural and remote areas of British Columbia to increase STI screening for all sexually active women.

Nurse practitioners are one of the first points of contact for people accessing primary care in rural and remote regions of British Columbia (Northern Health, 2013). This is significant because NPs are in a position to offer comprehensive care, including sexual health assessments and screening for STIs and papanicolaou (PAP) tests. Other primary health care services within the NP's scope of practice in BC are the screening and management of stable chronic diseases such as hypertension, diabetes, hypothyroidism, arthritis, and to provide anticipatory guidance, education, and health promotion (CRNBC, 2014). This means that NPs can provide comprehensive well woman exams to all women living in rural and remote areas of BC.

In a time where there are shortages of family practice physicians across Canada, especially in rural and remote areas of BC, NPs are well suited, educated, and capable of providing primary care to rural, remote, and underserved populations. According to Browne and Tarlier (2008) NPs include health promoting behaviours as part of their primary care rather than focusing exclusively on disease prevention. More importantly NP practice is legislated under the *Health Professions Act*, and the competencies approved by the CRNBC Board determine part of the requirements for nurse practitioners to practice and use the protected title of nurse practitioner (CRNBC, 2010).

Summary

In summary, in this chapter I identified that chlamydia is an STI that is usually seen in primary care practices and can have devastating reproductive sequelae for sexually active adolescents and women in their childbearing years if left undiagnosed or untreated. Middle-aged and older women have also been identified as a population where STI prevention practices are not being addressed. Women in this population may be newly single due to divorce, separation, or widowhood. As well, the lack of communication with their health care providers means that the women may not be being screened appropriately. Lastly, Aboriginal women require culturally appropriate and competent care that takes into account their sexual lives, including their needs for STI screening. Clinical practice guidelines are available to assist primary care providers in identifying patients at risk of contracting chlamydia or other STIs, so that health education and screening can be offered at the appropriate times. For at-risk populations, the NP can be integral in chlamydia detection and screening and can make this a core part of the well woman exam in primary care, consequently preventing long-term complications of STIs. There is limited information with regards to middle-aged, older and Aboriginal women, so some questions remain unanswered, such as if women are being infected by their male partners, or if women are not being offered screening on a regular basis. Consequently, middle-aged, older, and Aboriginal women may have asymptomatic infections that may compromise their health.

Chapter Three: Approach to Literature Review

An integrative literature review specific to women of childbearing age, middle-age, old age, and Aboriginal women was completed. The review process compared STI prevention practices for women of childbearing age and screening for women who are no longer worried about birth control due to menopause, along with screening for middle-aged women by primary care providers. Special attention was paid to Aboriginal women of childbearing age and post-menopausal women, and their need for culturally competent and sensitive care.

Studies were identified through an electronic database search using the Biomed Reference Collection, Cumulative Index to Nursing and Allied Health Literature (CINAHL) with Full Text, MEDLINE with Full Text, PsycARTICLES, PsycINFO, SOCINDEX with full text, and *Women's Studies International* from 1998–2014, with hand searches to update the search to 2014. The date parameters were chosen to compare whether or not STI rates, specifically rates for chlamydia, were increasing or decreasing during this time. Analysis of the literature search then focused on the past ten years, because public scientific knowledge is doubling every 1–2 years (Burns & Grove, 2009). Additionally, my preliminary findings distinguished that the increase in chlamydia has been substantial throughout Canada, the United States, and Australia in the past 10 years. The search terms used included chlamydia infection, sexually transmitted infection, advanced practice nurses, young women, adolescent girls, middle-aged women, older women, Aboriginal women, nurse practitioners, general practitioners, primary care, rural, Canada, and British Columbia.

The literature search was started using a Boolean/Phrase search for “chlamydia infection,” which resulted in 1879 articles. However, the search results were broad and non-specific. In order to make the literature relevant to my research questions, similar keywords and terms were used interchangeably using the Boolean/Phrase “and.” This resulted in a total of 3304 articles. Articles were initially reviewed based on the title and the abstract. Articles were then selected for further review based on the relevance to the project and research questions. The combinations of keywords used for the search process are in Table 1.

Table 1 Search Terms

Thematic Category	Key Terms
Chlamydia infection	chlamydia infection chlamydia infection AND adolescent women chlamydia infection AND young women chlamydia infection AND primary care chlamydia infection AND nurse practitioner chlamydia infection AND older women
Sexually Transmitted Infection	STI and Canada STI AND British Columbia STI AND rural AND Canada STI AND rural AND British Columbia STI AND primary care STI AND older women STI AND middle-aged women STI AND advanced practice nurses
Aboriginal women	Aboriginal women AND chlamydia Aboriginal women AND STI Aboriginal women AND STI prevention

In order for research articles to be included for analysis they had to be published in English, between 1998 and 2013, published in a peer-reviewed journal, and relevant to NPs/GPs, APNs, and primary care providers. The articles needed to address at least two of the following: primary care, NPs, GPs, adolescent/young women, and middle-aged and older women. Articles not published in English, published prior to 1998, specific to registered nurses, or that were editorials, press releases, or opinion articles were excluded. Inclusion and exclusion criteria are presented in Table 2.

Table 2 Inclusion and Exclusion Criteria

Inclusion Criteria	Exclusion Criteria
Published in English	Not published in English
Published between 1998 and 2013	Published prior to 1998
Relevant to NPs/GPs, advanced practice nurses (APNs), primary care providers	Editorials, press releases
Addressed at least two of the following:	Opinion articles
Registered nurses	
Nurse practitioners	
General practitioners	
Adolescent/young woman	
Middle-aged women	
Older women	
Published in peer reviewed journal or government website	

After rigorously reviewing the studies I was able to select research publications that were relevant to the primary questions. Data evaluation and quality of the studies were not

assessed because the studies had different research designs and research criteria. The process of examining the quality of all the studies is more conducive to reviews where the sampling frame is constricted and the research designs are comparable (Whittmore & Knafl, 2005).

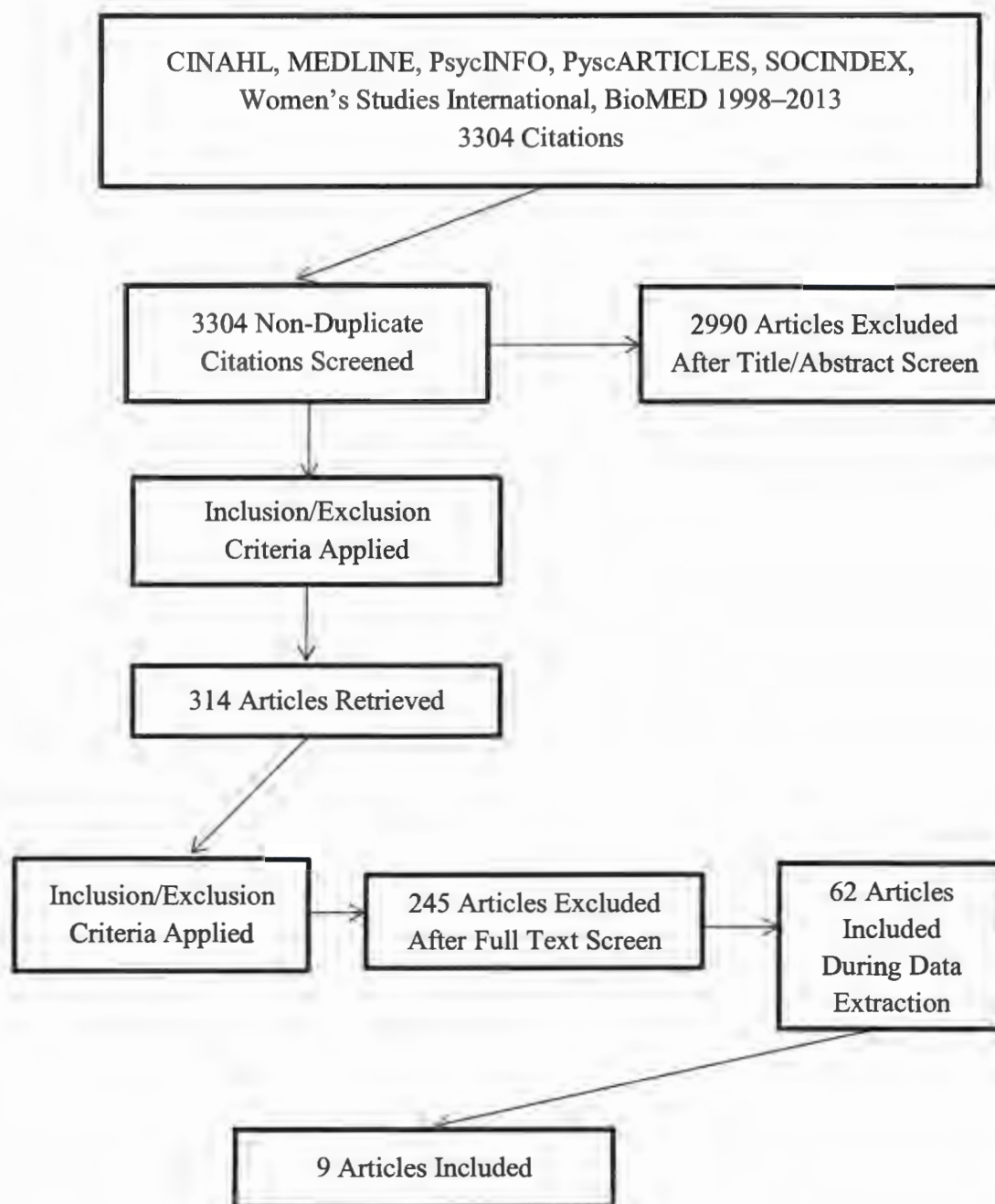
Various data sources were reviewed to improve a holistic understanding of my topic that can contribute to the knowledge base for clinical practice. I noted patterns and themes, looked for common and unusual patterns, to build a logical chain of evidence.

It is evident there is an abundance of research about *Chlamydia trachomatis* aimed at prevention and screening strategies for sexually active young women between 15 and 25 years of age. Most of the research is from the United States, the United Kingdom, Australia, and Canada (Balfe et al., 2010; Deering et al., 2010; Rekart et al., 2013). A very limited number of articles were relevant to sexually transmitted infections and middle-aged and older women and chlamydia. I widened the search to sexually transmitted infections (STIs) and older women. This proved to be ineffective because the articles identified did not produce research specific to older women and STI risk or prevention. After rigorously analyzing the 62 articles relevant to my research questions, I was able to identify 9 articles that were directly pertinent. A flow chart of the search methods is provided in Figure 1.

Articles were selected on the basis of provider knowledge of screening methods, patient knowledge about screening, and specific barriers and facilitators to providing and seeking screening of STIs. Further detailed analysis of the selected articles allowed me to select three research articles for in-depth analysis. The articles that were directly relevant to the project comprised one qualitative study (Balfe et al., 2010), one randomized control trial (RCT) (Hardwick, McKay, & Ashem, 2007), and one systematic review (Pavlin, Gunn, Parker, Fairley, & Hocking, 2006). Balfe et al. (2010) presented research findings from the

perspective of young women recruited from primary care settings. Hardwick, McKay, and Ashem's (2007) RCT considered the testing practices of primary care physicians in Toronto. Data extracted from this research can be used to increase educational awareness about clinical practice guidelines and implementing the guidelines for all primary care providers, including nurse practitioners. Finally, Pavlin et al.'s (2006) systematic review findings indicate that if women get tested for chlamydia as a normal part of their primary care they are more inclined to ask to be screened.

Figure 1 Search Methods Flow Chart



There was a limited amount of research specific to middle-aged and older women and STIs. Through the search process three articles specific to STIs and older women (Ng, Sandhu, Gustafson, & Lu, 2014; Poynten et al., 2013; Sherman, Harvey, & Noell, 2005) and one article specific to HIV prevention in older women (Tessler Lindau, Leitsch, Lundberg, & Jerome, 2006) were identified. The article by Ng and colleagues from Vancouver Coastal Health looked at an ethnic population of Chinese men and women who were screened for chlamydia. They found a higher incidence of chlamydia infections in the older age groups, the reason for this finding is unclear (Ng, et. al.). It is interesting to note that Ng et al., identify that screening may be sporadic for older Chinese women, especially if the physicians do not consider the women to be at high risk, this finding warrants further exploration to see if it is unique to the Chinese population or relevant to older women in the general population. The Poynten et al., 2013) article was a non-research review, making it useful only as background. Sherman, Harvey, and Noell's (2005) research study had the potential to answer my research questions because their research asserts that there is a need to improve how health care professionals address STI infections in middle-aged women. Sherman et al. identify that middle-aged women are still sexually active, but STI prevention interventions are aimed at the under-25 years of age cohort. Paradoxically, three articles focused on the over-screening of older women, all were in urban settings (Berman & Satterwhite, 2011; Bernstein et al., 2011; Jackson, McNair, & Coleman, 2014). For the purpose of this project and after analysis of the literature, one qualitative study about HIV prevention in older women was reviewed, because even though it is not specific to chlamydia prevention and screening, the correlation between chlamydia infection and susceptibility to HIV has been established in the literature and warrants further consideration (Idso, 2009; Tessler Lindau et

al., 2006). Due to the paucity of research conducted specifically on older women and STIs, the findings will be cautiously extrapolated from the two studies about older adults in general for the purpose of this project.

An article by a sexual health educator (Spring, 2014) was added because it discusses the issues of sexuality in the older population that is just beginning to be addressed in the current research. While this article is not a research study it contains a critique of services that are offered to middle-aged and older women that was helpful in my review.

Aboriginal women are a core group for whom NPs provide services in northern and rural British Columbia. Research specific to Aboriginal women and chlamydia infections and STIs other than HIV is very limited. Two articles relevant to this project were identified. One is a study from Australia (Fairbairn, Tyler, Su, & Tilley, 2010), and one concerns women living in a remote Canadian arctic community (Steenbeek, Tyndall, Sheps, & Rothenberg, 2009). As the Australian study was a prevalence study of chlamydia and gonorrhoea among young Aboriginal women presenting to the Alice Springs Hospital, it was not included in the analysis. The article from Canada was analyzed, because this article had potential to answer the research questions with regard to women living in rural and remote areas of Canada. While Aboriginal women are a worthy focus, the literature review on chlamydia revealed a lack of research specific to the population, and it is evident that future research is required to assist in developing or improving existing screening programs for Aboriginal women. A broad focus that includes Aboriginal and non-Aboriginal women who live in northern and rural communities has been selected for this integrative literature review because it is reflective of the health care settings in which NPs are employed by the regional health authorities in British Columbia.

Finally, the *Canadian Guidelines on Sexually Transmitted Infections* (PHAC, 2010), the *British Columbia Treatment Guidelines: Sexually Transmitted Infections in Adolescents and Adults* (BCCDC, 2007a), and the United States Preventative Services Task Force (USPSTF) guidelines and recommendations (Meyers et al., 2008) were analyzed and compared. These guidelines represent best practice in Canada, British Columbia, and the United States.

Chapter Four: Analysis of the Literature

Findings

This chapter presents research evidence that examines the relevance of chlamydia screening and rescreening in regards to the sexual reproductive health of women, in particular middle-aged and older women. A majority of the research literature is about women less than 25 years of age, to prevent reproductive complications that result from untreated or undiagnosed chlamydia. I will discuss the current practice of focusing on STI screening for women of reproductive age; this literature is well developed and provides guidance for implementing best practice guidelines in clinical practice. I will also discuss screening middle-aged and older women, because while there is an increase in the rates of infection among middle-aged and older women, there is minimal information and limited direction in the current guidelines for screening them.

Researchers have identified that STI screening is under-utilized by primary care providers (McKay, 2006). There are benefits to making STI screening a part of routine care in primary care practices as subsequent interventions can reduce the morbidity associated with STIs, this is particularly true for chlamydia (McKay, 2006). Nurse practitioners are in a prime position to work with all sexually active women to educate them about STI screening and prevention, as a part of a core service of primary care prevention. Liepert, Wagner-Delaney, Forbes and Forchuk's (2011) study findings about Canadian rural women's experiences with nurse practitioners' shows that women living in rural communities prefer female primary care providers, because the women view these providers as non-threatening, that nurse practitioners tend to be more aware of community resources than doctors, and that

more time is spent with the patient and options for treatment and care are discussed with each woman, taking into account her individual circumstances.

Facilitators and Barriers to Screening As Viewed by Women

Facilitators to screening. A review of the current research literature identified that discussion about STIs and testing is facilitated through the patient being familiar with their health care provider and the provider providing nonjudgmental and supportive care, offering STI screening as part of routine care, initiating the discussion about STI screening, and offering and discussing privacy and confidentiality guarantees (Friedman & Bloodgood, 2010). Pavlin et al. (2006) propose that women would be more inclined to be tested and screened for chlamydia if they understood that chlamydia was a common STI, that contracting it can happen to anyone, that it can be asymptomatic and have serious and long-term effects such as infertility, and that it is treatable. The authors note that normalizing and removing the stigma from chlamydia may be beneficial to increase screening of young, sexually active women. They also argue that support after an actual diagnosis is equally important to assist women to cope with a diagnosis of chlamydia and support them in notifying their current partner and/or past partners (Pavlin et al., 2006).

The purpose of Pavlin et al.'s (2006) systematic review of the screening of women in Australia was to gather data to design a suitable and effective chlamydia screening program in Australia. The identified themes may be applicable for developing an appropriate and effective chlamydia screening program specifically for middle-aged and older women living in rural and remote areas of BC, where the level of service offered to middle-aged and older women is unknown. Pavlin et al. aimed to document the views, attitudes, and opinions of women who were screened, tested, and diagnosed for chlamydia infections in Australia.

Thematic analysis was used to assess the quality of the different studies in order to reach a consensus on the main and recurrent themes. The authors used online databases (MEDLINE, Meditext, PsycINFO, Web of Science) and reference lists up to August 2005. Major themes identified were the need for knowledge and information, choice and support, worries about confidentiality, cost, fear, anxiety, and stigma. Pavlin et al. reported that if women understood that chlamydia could be a serious infection that can cause infertility, and which is often asymptomatic, they would be more likely to get tested. Additionally, women want to have appropriate and meaningful support to deal with a diagnosis of chlamydia. The themes of barriers and facilitators to screening that Pavlin et al. identified may be applied when planning appropriate and effective chlamydia screening for middle-aged and older women as part of primary care practice.

Barriers to screening. Balfe et al.'s (2010) qualitative study about barriers and enablers to chlamydia testing examined what prevents or discourages young Irish women between the ages of 18 and 29 from seeking screening for chlamydia. The authors chose to focus on the attitudes and beliefs of women who have never attended primary care for STI screening. The views of women who have attended primary care for STI screening may be different from those of women who have never sought STI screening. This information is important to recognize when planning programs or services to encourage all women to seek STI screening (Balfe et al., 2010). The data collected was intended to modify screening services to make them adequate and accessible to all young women (Balfe et al., 2010). Thirty-five female participants were recruited from six primary care settings and two family planning clinics. Young women were eligible to take part in the study if they were 18–29 years of age and had accessed primary health care in a community health care setting in the

past 12 months. None of the respondents who were recruited had ever attended a health service for a previous STI test of any kind. Balfe et al. (2010) investigated “Why respondents had not sought STI testing; who they considered likely to contract STIs such as chlamydia; and what images and connotations chlamydia had for them” (p. 135). The researchers identified common barriers and reasons for young women not being screened, including inconvenience and stigma associated with STI testing, embarrassment and shame, “othering” STIs as someone else’s problem, lack of information and knowledge about STIs, partner notification, and fear and anxiety about being diagnosed with an STI. Balfe et al. suggested that young women are hesitant to seek health care services for STI testing since they do not feel that they are at risk of contracting chlamydia. The stigma associated with STI testing services also kept young women from being tested. These findings are similar to the barriers identified by Aboriginal women in relation to health care professionals working with them (Browne & Fiske, 2001). The question is then raised as to whether Balfe et al.’s findings are only relevant for young women or could also apply to middle-aged and older women living in rural communities.

The studies about middle-aged women reported that some of the barriers to being screened were lack of knowledge about STIs, embarrassment and shame when talking about sexual health, primary care providers’ negative and dismissive attitudes towards later life sexuality, and limited counselling received by middle-aged women regarding STIs compared to that received by younger women (Gott & Hinchcliff, 2003; Minkin, 2010; Tessler Lindau et al., 2006). This means that middle-aged women may not have current knowledge to ask their primary care providers about STI screening because STI prevention and education is usually aimed at younger women. Without knowledge about prevention, this group of women

may be putting themselves at risk for STIs. This is an area that warrants further research with women, to learn what the women need to know in order to prevent the spread of STIs and how women would like to learn this information.

The multitude of barriers identified by women makes it difficult for primary care providers to appropriately screen, diagnose, and treat women for chlamydia. Additionally these barriers make it even more difficult for a woman to be proactive in addressing her own health care needs. Barriers identified by women in Pavlin et al.'s (2006) systematic review included:

1. Ignorance and inaccurate information about chlamydia.
2. Denial by the woman (not wanting to acknowledge sexual activity).
3. Moral connotations and stigma of being diagnosed with chlamydia put women off being screened.
4. Fear and anxiety about possibly being infertile.
5. Discomfort with partner notification, and the negative effect of a diagnosis of chlamydia on a personal relationship.
6. Confidentiality and privacy concerns.
7. Pragmatic concerns such as the time and inconvenience of a pelvic exam.

Tessler Lindau et al.'s (2006) study explores the sexual attitudes, behaviour, and patient physician communication about HIV/AIDS among older women. The purpose of the study was to explore new knowledge about older women's attitudes about sexuality and if such data is valid. Tessler Lindau et al. conducted a cross-sectional survey of 55 community-residing women aged 58–93 to understand older women's attitudes, behaviour, and communication with their physician about sex and HIV. The authors asserted that social

factors might have an influence on the prevention, transmission, and detection of HIV/AIDS among older adults. The use of highly active antiretroviral therapy (HAART) means that people with HIV are living longer and healthier lives with the ability to remain sexually active (Tessler Lindau et al., 2006). In addition, the introduction and widespread use of Viagra and other erectile dysfunction drugs has rejuvenated the sexual lives of many older couples, which could possibly increase older women's risk of exposure to HIV and other STIs (Tessler Lindau et al., 2006). These are valid concerns of older adults that primary health care providers may overlook if they do not ask women who are over 55 years of age questions about their sexual lives.

Tessler Lindau et al. (2006) recruited women over the age of 58 years from several neighbourhoods in the Chicago metropolitan area. Participants were selected using census tract data, for racial, ethnic, and socioeconomic diversity. The study aimed to recruit 10 women in each of 4 age groups (60–64, 65–69, 70–74, 80+). Marital status included never married, married, divorced, and widowed and the study included three ethnic groups of Hispanic, non-Hispanic African Americans, and non-Hispanic white. The participants differed by range of education and socioeconomic background. The questionnaire's major domains were sociodemographics; social history, including sexual relationships; and attitudes about (a) sexuality and STIs, including HIV/AIDs, and (b) patient-physician communication with regard to sexuality, STIs, and HIV (Tessler Lindau et al., 2006).

The overall results indicated that 98% of the women surveyed agreed that an active sex life is good for health and 89% indicated that sexual satisfaction was an important part of fulfilment in life. Twenty-seven percent of women reported having a sexual partner in the last month, 38% had at least one sexual partner in the last 12 months, and 57% had at least

one sexual partner since their 60th birthday (Tessler Lindau et al., 2006). These results indicate that sexual activity and sexual health are important areas of health and well-being for older women.

Only 29% of the women surveyed by Tessler Lindau et al. (2006) made changes in their sexual behaviour because of the risk of acquiring HIV. Notably, African Americans were considerably more likely to have made preventive behaviour changes. Only 28% of women used a condom in their last sexual encounter. Again, African American women were more inclined than their white counterparts to report condom use. Notwithstanding relatively low condom use, 81% of women believed that condoms should be used regardless of whether there is a risk of pregnancy. The gap between attitude and action means that there are still significant education and prevention programs that need to be developed specifically for older women.

Seventy-five percent of the women thought doctors should inquire about sexual health, despite only 55% of women reporting that their doctor discussed sexual health with them since they had turned 60. Significantly, 75% of African American women indicated that their doctor initiated discussion about sexual health compared to 45.9% for their white counterparts. During their last routine medical visit, only two women were offered HIV testing, one woman was offered other STI tests, and only six women were given information on STIs or HIV by their physician (Tessler Lindau et al., 2006). Clearly, this study reveals a lack of patient/provider relationship building and communication. This could be due to the physician being ill informed or embarrassed about asking older women about their sexual health. The results indicate that physicians and other primary care providers, such as NPs, need to be more conscientious about including a sexual health history when caring for their

older female patients. Even though this study is about older women and HIV, the results can be useful in amending current STI guidelines to include middle-aged and older women in STI prevention practices generally. Gravitt et al.'s (2013) study about women from the sexual revolution era (1960s to 1970s) identifies that middle-aged and older women need a proper sexual history to be done by the health care provider in order to address women's risks for STIs and potential cancer risk.

In Steenbeek et al.'s (2009) study of an Aboriginal community in Nunavut, the authors noted barriers to STI screening, particularly chlamydia and gonorrhea, because of the community's remote geographical location and having inadequate access to health care services. The participants lived in communities with greater than 10% STI prevalence that have cohesive sexual networks and are at risk for related complications. Furthermore, the authors noted three barriers reported by participants about using condoms: not wanting to offend their partners, fear of implying that an individual has an STI, and not being able to plan ahead.

Limitations to the Steenbeek et al. (2009) study were the small sample size—224 eligible participants—and participant recall. Not everyone participated due to being away because of working, fishing, hunting, or visiting other communities. These are unique barriers for middle-aged Aboriginal women, because their livelihood depends on the conditions that pose barriers to STI screening. This makes it more challenging not just for the women but also for their transient male sexual partners to get tested. Most of the participants were female, which may reflect a recruitment bias. Self-reporting of previous STIs or number of sexual partners may have influenced underreporting due to social stigma, failure to recall, and lack of knowledge that the participant even had a particular STI.

The research findings in Balfe et al. (2010), Pavlin et al. (2006), Tessler Lindau et al. (2006), and Steenbeek et al. (2009) are helpful in addressing my research question(s) because all of their research outlines specific barriers identified by women that keep them from getting tested for chlamydia and other STIs. These findings can be used in teaching primary care providers how to identify when women need screening for STIs, without the women feeling judged, singled out, or looked down upon.

Facilitators and Barriers for Primary Care Practitioners to Offer Screening

Facilitators to screening. There are some facilitators that enable primary health care providers or health care professionals to screen women for chlamydia and other STIs. Tessler Lindau et al.'s (2006) study indicates that women need more than education to prompt them to ask for screening for STIs. The study highlights that skill-based interventions and education are more meaningful and useful to women seeking screening for STIs (Tessler Lindau et al., 2006).

A study by Sherman et al. (2005) identified gaps in current resources and made recommendations for health care practice and the need for future research. The authors asserted that there is a convincing need for interventions to reduce STIs and unintended pregnancy in the older female population. The authors contended that research has discovered that middle-aged women will continue to have a sex life that evolves as they grow older and face health challenges.

As indicated in previous research, the change in relationship status in the middle-aged and postmenopausal woman influences the sexual risk behaviours she may be exposed to. Such factors include divorce, separation, and widowhood. This means the newly single older

woman will likely enter into new relationships and sexual encounters. The risk of acquiring an STI in this demographic increases because of the likelihood that the woman will not use condoms due to lack of knowledge about STIs, and because postmenopausal women are no longer concerned with becoming pregnant and will not need to use barrier methods or other forms of birth control (Sherman et al., 2005).

A survey conducted by Kalichman, Rompa, and Coley (1996) compared skill-based and education-only HIV prevention interventions designed especially for women. The study consisted of two skill-based conditions: (a) instruction, modelling, and practise of skills in sexual communication, assertiveness, condom negotiation, and risk refusal skills, and (b) instruction and practise in behavioural self-management skills such as cues to risk-producing situations and identification of psychological and environmental triggers for high-risk situations (Kalichman et al., 1996). The control condition provided education and discussion regarding HIV transmission, illness, risk factors, and motivation to reduce risk. The researchers found that the skill-based interventions, either alone or in combination, resulted in considerably higher levels of use of risk reduction behaviours compared to the education-only group. Health education interventions targeted at middle-aged and older women need to include skills such as how to buy and use condoms correctly, how to be assertive in asking a partner to use a condom, how to discuss their own sexual pleasure, and communication, which are needed for women to have the intent for behaviour change (Kalichman et al., 1996). Middle-aged and older women require support, education, and open discussion with their primary care providers in order to feel safe and comfortable to seek or even to know to seek STI screening. Primary care providers require the requisite skills and comfort to perform a thorough sexual health assessment of sexually active middle-aged women.

Barriers to offering screening. Primary care providers, such as some general practitioners, may be inattentive in discussing issues of sexuality and sex with their older patients (Minkin, 2010). As pointed out by Maes and Louis (2011), a health care provider typically does not discuss sexual health unless a problem arises. Slinkard and Wallace Kazer (2011) assert that many older adults remain sexually active from their first sexual experience up to the last decades of life. Thus health care providers need to be ready to identify individuals at risk and screen appropriately to prevent disease morbidity and mortality (Slinkard & Wallace Kazer).

In the Balfe et al. (2010) study the barriers most commonly identified by physicians to offering chlamydia testing were not having enough time to discuss chlamydia with their patients, not having adequate education and training to conduct sexual health assessments, and inadequate education and training about effective STI counselling. Patients believed that the discussion of STIs was not confidential and that physicians did not have basic, useful, up-to-date factual information about chlamydia (Balfe et al., 2010).

Scholes et al. (2006) conducted a randomized control trial (RCT) of strategies to increase chlamydia screening in young women. The study design employed an RCT to evaluate two conceptually based interventions in the hope of increasing adherence to the chlamydia screening guidelines used in standard clinical practice. Twenty-three primary care clinics were randomly assigned to either control (standard implementation: n = 11 or 1732 women) or intervention (enhanced implementation or chart prompt: n = 12 or 1777 women). The interventions were aimed at women aged 14–20 years. The authors used the Precede/Proceed planning model designed by Green and Kreuter (1991) to guide

development of the multidimensional intervention. The model identifies three categories of factors that influence provider behaviour and/or patient health:

- (1) predisposing factors that target provider motivation to change and include knowledge, attitudes, and self-efficacy;
- (2) enabling factors, such as training and infrastructural support, in the practice, organizational, or community environment facilitate change; and
- (3) reinforcing factors reward and strengthen behaviour change. (p. 344)

The mean age of the enrolees was 17.3 years and an estimated 50.5% had been sexually active in the 2 years prior to the implementation. Approximately one third of the adolescents/young adults were tested for chlamydia during the baseline period. The baseline mean age of the primary care providers was 49.5 and over one third were female. Approximately 75 of the 105 were family practitioners and 1 of the 105 were nurse practitioners in the control clinic, and 75 of the 99 were family practitioners and 2 of the 99 in the intervention clinic were nurse practitioners. An important outcome of the study was that there was an increase of testing rates (74.6 %) in women who came to the intervention clinic for preventative health care, i.e. PAP tests, compared to the control clinic (70.4%). The authors conclude that despite evidenced-based national and local guidelines, the rates of testing for chlamydia remained low. They suggest that current research implies that a blend of organizational-level change and patient activation strategies may advance the translation of relevant research into successful chlamydia screening practices and into action plans (Scholes et al., 2006). Although these finding describe the experiences of young women, the

process can be helpful when designing care programs for women of various ages in a rural or remote communities.

In 2004, Toronto Public Health initiated a five-year social marketing campaign in an effort to reduce the prevalence of chlamydia among youth and young adults. The initial phase of the campaign consisted of a series of five information packages that were mailed out to primary care physicians in Toronto. Included in the information packages was material designed to support proactive chlamydia testing of sexually active youth under the age of 25. Hardwick et al. (2007) gathered baseline data on how current physician practices influence or dismiss chlamydia testing among youth and young adults. The sample of physicians originated from Toronto Public Health, which produced a master list of 2900 local, general, and family practice physicians. From the master list a random sample of 1000 physicians was selected to receive the survey. The questionnaire contained 35 items. Of 893 physicians that were sent a questionnaire, 280 completed and returned it. This made for a 31% response rate. Physicians were asked about the likelihood that they would recommend chlamydia testing for 15–24-year-old patients. Depending on the context or type of visit, 56% were very likely to offer chlamydia testing during a PAP test, 48.8% would offer testing during an annual check-up, 90.6% would offer testing if the patient asked, and 2.8 % would offer testing to patients visiting for other reasons. Barriers identified by physicians to offering chlamydia testing to female patients ages 15–24 were: patient being asymptomatic for chlamydia infection; testing is uncomfortable for the patient; physicians identified being uncomfortable offering chlamydia testing; not enough time to discuss potential outcomes of being infected with chlamydia; and it is not cost effective to routinely test for chlamydia (Hardwick et al., 2007).

Hardwick et al. (2007) identify that their study sample frame did not offer demographic information needed to evaluate whether the final sample was representative of all sexually active people aged 15–24. The authors acknowledged that the responses from the study participants might be different if the questions in the survey were specific to female patients only. Additionally, response bias could be present as those physicians that did respond to the survey could more interested in the topic than those who did not respond. This self-selection bias suggests that the study findings reflect higher frequencies of sexual health assessment and chlamydia testing than other studies have found in the general population of family physicians (Hardwick et al., 2007).

Conversely, Berman and Satterwhite (2011) report that older women are being screened unnecessarily and that younger woman are not being screened enough. Berman and Satterwhite report that the United States Preventative Service Task Force (USPSTF) recommends annual screening of all sexually active women under 25 years of age, but recommends against routinely screening women over 25 years. Women over 25 years should only be screened when there are indications for increased risk of infections, such as history of STIs, new or multiple sex partners, inconsistent condom use, and exchanging sex for money or drugs (Berman & Satterwhite, 2011). Berstein et al. (2011) support this notion by arguing that because public health resources available for STI control and reproductive health services are limited, it is necessary to screen only certain populations, such as women of childbearing age. Berstein et al. (2011) found that in primary care settings less time is spent with a patient and that preventative screening is time consuming, so rather than doing a detailed sexual history it is easier to test everyone and thus public health resources are not being utilized appropriately.

Stigma. In order for women to access primary care and be screened for chlamydia or other STIs they have to go through a medical system where they tend to feel embarrassed. Barriers to access include primary care providers being male, primary care providers not welcoming or initiating sexual health conversation, lack of access to a clinic due to location, and women feeling stigmatized or judged by health care providers or others in society (Balfe et al., 2010). It is especially important to note these barriers when working with women in rural and remote areas where anonymity and fear of confidentiality being broken are viewed as a deterrent to seeking care (Deering et al., 2010).

When a woman is stigmatized she may view herself as lacking and, in turn, take on society's social expectations and end up comparing herself to these expectations (Balfe et al., 2010). In other words, society sets the rules of what is normal and what is considered deviant or shifting away from societal norms. People view themselves as free from disease or problems and those who display abnormalities, such as STIs, are considered to be abnormal and are stigmatized. The stigmatized woman will then experience shame or remorse about her inadequacies and the shame is intensified by the negative emotional responses of others (Balfe et al., 2010). These feelings of shame, embarrassment, and stigma can keep women from seeking screening and treatment of chlamydia infection and other STIs, putting them at potential risk for PID, ectopic pregnancy, infertility, and chronic pelvic pain (PHAC, 2010). Research with women living in the north has previously reported that women are reluctant to go for care when they feel that care providers will judge them (Browne & Fiske, 2001).

Sexually transmitted infections are infections that are more likely to attract stigma in Western cultures, especially if there is a perceived risk to others and when it is known that such infections are preventable (Balfe et al., 2010). The stigma associated with STIs is even

greater for women, because women who are diagnosed with an STI may be seen as promiscuous (Balfe et al., 2010). Nurse practitioners need to be mindful of how clients might view themselves. This includes how NPs initiate a conversation with a new patient based on this knowledge. Scambler (2009) defines stigma is a social process characterized by rejection, exclusion, blame, or devaluation of a person or group that is based on an enduring feature of identity given by a health problem. Nurse Practitioners need to use language that conveys to the woman that she is accepted and the NP is open to discussing the woman's concerns with her. For example, rather than asking the woman about her husband, instead ask about her sexual partner or partners.

Clinical Practice Guidelines

Guidelines are systematically developed statements that support practitioners to make informed decisions about appropriate health care for specific clinical circumstances (Greenhalgh, 2014). Greenhalgh points out that guideline development and recommendations require clinical decision making that includes personal or social values, ethical principles, preferences, and culture. Four clinical practice guidelines were examined, compared, and contrasted to show similarities, differences and potential gaps in delivery of service. The *Canadian Guidelines on Sexually Transmitted Infections* represent best practice for the management and prevention of chlamydia in Canada as outlined by the Public Health Agency of Canada (PHAC, 2010a). British Columbia's provincial treatment guidelines for STIs are issued by the British Columbia Centre for Disease Control (BCCDC, 2007a). The United States Preventative Services Task Force (USPSTF) (Meyers et al., 2008), and the Centers for Disease Control clinical practice guidelines (CDCP, 2010) are based on

American practice standards. The four guidelines represent best practice in Canada and America.

A table comparing the Public Health Agency of Canada (PHAC, 2010a), the *British Columbia Treatment Guidelines for Sexually Transmitted Infections* (BCCDC, 2007a), the United States Preventative Services Task Force (USPSTF) (Meyers et al., 2008), and the Centers for Disease Control and Prevention (CDCP, 2010) on screening recommendations is provided in Appendix 1. Three of the four guidelines recommend screening sexually active women less than 25 years of age (PHAC, 2010; BCCDC, 2007; CDCP, 2010). The USPSTF guidelines recommend screening women less than 24 years of age (Meyers et al., 2008). British Columbia STI treatment guidelines refer to the PHAC guidelines for screening. The USPSTF guidelines recommend determining a pregnant woman's risk factors before screening for chlamydia. If the woman is not at an increased risk, i.e. engaging in high-risk behaviours, then the USPSTF guidelines recommend against routine screening because there is moderate to high foregone conclusion that the screening will have no benefit or that harm outweighs the benefits (Meyers et al., 2008). In contrast, the PHAC, BCCDC, and CDCP guidelines recommend that all pregnant women be screened in the first trimester and rescreened in the third trimester if positive at first trimester or at risk for reinfection (PHAC, 2010a).

Interestingly, the USPSTF guidelines did not make an evidence-based decision about the specific age at which STI screening should begin. Typically, screening should begin at age of first sexual encounter. The USPSTF guidelines note that the clinical sequelae, such as infertility and ectopic pregnancy, are different in women of post-reproductive age (Meyers et

al., 2008). While there is no direct evidence provided, the USPSTF contends it is rational to stop routine screening at menopause or at 55 years of age (Meyers et al., 2008).

Finally, the PHAC (2010a) and BCCDC (2007) guidelines recommend screening all sexually active men less than 25 years of age, whereas the USPSTF guidelines do not recommend screening men who are not at risk (Meyers et al., 2008). The CDCP (2010) guidelines state that evidence is insufficient to recommend routine screening for chlamydia in sexually active young men because of factors such as feasibility, efficacy, and cost-effectiveness. However, the CDCP guidelines note that the screening of sexually active young men should be considered in clinical settings with a high prevalence rate, such as adolescent clinics, correctional facilities, and STD clinics. The CDCP guidelines affirm that the primary focus of chlamydia screening efforts is to detect chlamydia among women less than 25 years of age to prevent reproductive complications, and that targeted chlamydia screening in men ought to be considered only when resources permit and it does not impede chlamydia screening efforts in women. None of the guidelines mention different areas or populations, such as rural and remote areas and Aboriginal women. This lack of acknowledgment potentially makes the guidelines exclusive to urban settings.

All four guidelines are helpful to NPs working in primary care settings that have high volumes of the demographics outlined in each guideline, but more research is needed for NPs working with middle-aged and older women in rural and remote communities. As mentioned earlier, two research articles recommended against screening women older than 26 years of age (Berman & Satterwhite, 2011; Berstein et al., 2011). However, their recommendations are based on screening in urban settings where access to services is abundant. It is worth mentioning that women who live in rural and remote communities do not have an abundance

of sexual health services and face a variety of different barriers that make seeking screening and treatment even more difficult.

The review of the research literature and four guidelines has revealed that the clinical practice guidelines do not include women over the age of 25 years of age unless high-risk behaviour warrants screening. The parameters of the guidelines mean that primary care providers are possibly missing opportunities to screen women over 25 years of age, especially middle-aged and older women living in rural and remote communities. This means that middle-aged and older women, including Aboriginal women, living in rural and remote areas are potentially not receiving the same level of STI screening and prevention practices as their younger counterparts.

Chapter Five: Discussion, Conclusions, and Recommendations

Discussion and Conclusions

This review examined research literature concerning the barriers and facilitators to STI screening in primary care clinics for women, in particular chlamydia. I have examined the barriers and facilitators to STI screening from the viewpoints of women and primary care providers. The purpose of this literature review is to identify the ways in which NPs working in primary care can incorporate STI screening as part of the well woman examination, especially among middle-aged and older women, in order to prevent long-term complications of undiagnosed STIs such as PID and an increased risk of acquiring HIV. The review also examined Aboriginal women as a group that require primary health care and are often underserved. The following research questions were answered:

- 1) How can the family nurse practitioner (FNP) incorporate STI screening for all women living in rural and remote communities in British Columbia, as a core service that is part of the well woman exam in primary care, to prevent long-term complications of STIs in women of childbearing age?
- 2) How can the FNP improve STI screening for middle-aged women who are no longer concerned with birth control, but still sexually active?

In answering these questions, seven themes were identified with regard to primary care provider practice: 1) managing STIs in middle-aged and older women, 2) including sexual health in the health assessment, 3) starting the conversation, 4) avoiding ageist assumptions, and 5) opportune times to offer screening, 6) understanding Aboriginal women's sexual health, 7) drawing on the clinical practice guidelines.

Managing STIs in middle-aged and older women. In order to screen for and prevent STIs among middle-aged and older women, primary care providers need to be educated on how to appropriately screen women in this age group. There are challenges for primary care practitioners, because there are few studies about whether the sexual risk behaviours in older adults have changed over time. Successful approaches to management of STI screening and treatment, particularly in rural and remote communities, can be implied from organizational-level change, and patient motivation strategies may advance the interpretation of relevant research into successful chlamydia screening practice policies and guidelines.

A limited number of studies focus on health care providers' insight into and management of sexual problems among older adults (Maes & Louis, 2011). Lack of primary care provider knowledge about older women's sexual behaviour, interactions with physicians about sexual activity and sexual risks, attitudes of primary care providers, lack of education and prevention aimed at older women, and age appropriate interventions have been identified in the review as areas that warrant further attention (Tessler Lindau et al., 2006; Poynten et al., 2013; Sherman et al., 2005). Nurse practitioners can offer holistic care that includes chronic disease management, treatment of menopausal symptoms, and sexual health.

Including sexual health in the health assessment. When primary care providers include sexual health assessments as part of the well woman exam in middle-aged and older women, the care provider is acknowledging an important aspect of women-centred care. By not including sexual health as part of a health assessment, care providers are ignoring an aspect of health that is directly linked to quality of life (Farrell & Belza, 2012).

Starting the conversation. Primary care providers can facilitate the conversation by providing nonjudgmental and supportive care. By reinforcing that the conversation between the primary care provider and the woman is private and confidential the NP can create trust in the relationship that will enable the woman to share about her own health care needs. Primary care providers can explain that chlamydia is a common STI that anyone can contract. Offering support when there is an actual diagnosis is very important in order to assist women to manage with a diagnosis of chlamydia and assist the woman to inform or name her contacts for treatment.

Avoiding ageist assumptions. Primary care providers cannot afford to make ageist assumptions that sexually transmitted infections are not an issue for adults over 50. When PCPs acknowledge that an active sex life and sexual satisfaction are important parts of middle-aged and older women's overall well-being, they can avoid ageist assumptions. This acknowledgment provides a basis for developing an open and trusting relationship between the PCP and their middle-aged and older women patients. Nurse practitioners can work with older adults in the primary care settings through screening, comprehensive history taking (including sexual histories), physical examination, and prevention strategies specific to this age group (Maes & Louis, 2011).

Opportune times to offer screening. Nurse practitioners and all primary care providers have the opportunity to offer primary and secondary prevention of STIs to the middle-aged and older women populations. The opportune times for such assessments may be the first time a patient is meeting their new health care provider or when the woman presents to the clinic with ambiguous signs and symptoms, such as abdominal pain, dysuria,

low back pain, or joint pain. Therefore, PCPs need to include STIs in their differential diagnosis.

Nurse practitioners, who work from a holistic perspective as opposed to the medical model, which has a disease-oriented focus, are able to make their patients feel welcome to talk about their concerns with unconditional regard and respect. Nurse practitioners are able to foster this atmosphere of mutual trust and respect by building trusting relationships with their patients through taking the time to listen to a patient's voiced concerns, and by presenting themselves as non-judgmental and approachable. Nurse practitioners in primary care clinics typically have more time than GPs to work with women to address their complex health needs in the context of their lived experience, because some GPs work under a model of fee-for-service and this puts time limits on appointments.

Understanding Aboriginal women's sexual health. In order to provide Aboriginal women with appropriate and culturally competent care, it is important for primary care providers to understand that health care extends past culture, lifestyle, geography, and genetics (Palacious & Portillo, 2009). Social determinants of health such as poverty and geography, and social justice issues such as racism and discrimination interplay individually and collectively on health outcomes (Palacious & Portillo). Understanding how these factors affect the health outcomes of anyone is critical, but is particularly important for Aboriginal women, because traditionally Aboriginal men and women were considered equal, with complementary gender roles. Nurse practitioners working in rural and remote communities are in a position to work with the local First Nations organizations and First Nations bands to extend their service to First Nations women, from adolescents to women of reproductive age, middle-aged and older women. These services could include women's health issues, such as

sexual health teaching, contraceptive management, weight management, as well as treatment for osteoporosis; autoimmune disorders, such as fibromyalgia, lupus, and rheumatoid arthritis; and management of chronic diseases such as hypertension, and diabetes. Screening women of all ages for chlamydia and other STIs is important in the prevention and treatment of chlamydia.

Paying particular attention to Aboriginal women and STI screening. While there is limited research specific to screening Aboriginal women for STIs, there is relevant research about cultural competence and the importance of acknowledging the influence of Aboriginal culture on people's experiences of health and wellness. All women need sensitive and appropriate health care. According to Douglas et al. (2011), culturally competent care can be offered in a respectful, culturally appropriate way to Aboriginal women through social justice for all. Social justice guides nurses' decision making in relation to the patient, family, community, and other health care professionals. Nurse practitioners who engage in critical reflection of their own values, beliefs, and cultural heritage can have an awareness of how these assets and concerns can affect culturally consistent care. Having knowledge of cultures allows NPs to understand pertinent perspectives, traditions, values, practices, and family systems of the culturally diverse individuals, families, communities, and populations they provide care for. Nurses can advocate for the inclusion of a patient's cultural beliefs and practices in all areas of care. This is an area for future research specific to Aboriginal women, both childbearing and middle-aged and older women.

Drawing on clinical practice guidelines.

The Canadian *Guidelines* (PHAC, 2010a) and the BC *Guidelines* (BCCDC, 2007a) do not address STI screening for people over the age of 25 years. The CDCP *Guidelines*

(2010), and the USPSTF *Guidelines* (Meyers et al., 2008) only recommend screening older women with risk factors such as new sexual partners or multiple sexual partners. In fact, the USPSTF *Guidelines* explicitly do not recommend screening women 25 years and older who do not engage in high-risk behaviour. While the USPSTF *Guidelines* recognize that some women who do not engage in high-risk sexual behaviour may benefit from screening for chlamydia and HIV, they conclude that the net benefits of chlamydia and HIV screening do not justify routine screening in all women. None of the guidelines have specific treatment recommendations for older people that take into consideration chronic diseases or co-morbid conditions. When an NP is trying to figure out which guideline to use and how to apply a guideline to middle-aged and older women, good clinical assessment and judgment (as in any case of diagnosing and treating a patient) should be implied. However, determining which guideline to utilize can be confusing to an NP when none of the guidelines have specific screening and treatment recommendations for middle-aged and older women. The primary care provider is left to adapt the guideline to the woman's plan of care, keeping in mind that medications and the woman's self-care practices may need to be adjusted based on interactions or physical limitations.

Summary

Sexual reproductive health is an important area of practice and research where NPs can do further research because of the implications and consequences of undiagnosed STIs on the reproductive tract of childbearing women. It is also an emerging area of prevention where NPs can make significant contributions to primary health care services by including sexual health assessments for middle-aged and older women and discussing the possibilities and risks for STIs. Further research to identify gaps in service delivery and sexual health care

for middle-aged and older women is needed to guide evidenced-based practice for primary care service delivery.

Overall the research reviewed showed that primary care providers, mainly physicians, were not offering chlamydia screening at opportune times during an appointment with a patient that fit in the demographic parameters of the guidelines. Limited screening may be manifest as another barrier that is bestowed upon the patient, who may too embarrassed or shy to ask about STI screening. Primary care providers, such as physicians and nurse practitioners, can implement STI guidelines when appropriate to decrease this barrier.

By limiting the screening to women of younger age groups, women with risk factors are being missed. Ng, Sandhu, Gustafson, and Lu's (2014) findings are comparable to the changes in risk factors for middle-aged women in rural and remote communities with the evidence of the higher rates of chlamydia infections in this older age group. As the incidence of STI infection for younger women have increased in communities with oil, gas, and mining, we could potentially see increased rates of infections for women of First Nation and women who live in rural and remote communities.

Recommendations

The following recommendations are suggested based on the information gathered from literature as they pertain to practice, education, and research. These are recommendations that will enhance screening and prevention practices for middle-aged and older women.

Practice.

- Nurse practitioners can provide anticipatory guidance and education to women of all ages about sexual health, STI screening and prevention, especially to middle-aged, older, and Aboriginal women living in rural and remote areas of BC.
- Nurse practitioners must be cognizant of opportune times to screen all women who present with risk factors for STIs.
- All PCPs need to be able to identify individuals at risk and screen appropriately.
- Nurse practitioners and all PCPs need to be aware of the language used when discussing STIs. Primary care providers should avoid judgment, bias, and assumptions.
- Testing should be offered in an atmosphere that is nonjudgmental and comfortable for the patient.
- Sexually transmitted infection screening should be normalized to reduce the stigma and shame of seeking STI screening and treatment.
- Nurse practitioners can be a voice as part of the health care team by advocating for and identifying service delivery changes, with the needs of the community being taken into consideration. For example, the increase of STIs in northern BC communities and its correlation with increases in the number of mining and oil camps should be a concern of all PCPs.
- Nurse practitioners can involve all stakeholders in how clinical practice guidelines should be relevant or amended for affected populations such as middle-aged and older women.

- Culturally competent care ought to be a part of all PCPs' practice in order to keep working towards the best possible health outcome.

Education.

- All primary care providers need to have the most up-to-date education about sexual health and STIs, and this includes having the requisite skills and comfort to perform a thorough sexual health assessment of sexually active middle-aged and older women.
- Primary care providers must be knowledgeable in how to identify when any woman requires screening for STIs, not just the high-risk group under 25 years of age.
- Development of education and prevention programs that specifically address the STI screening practices for middle-aged and older women would be beneficial in primary prevention and screening.
- Updating of Clinical Practice Guidelines to address alternative medication regimes or treatment plans for women who have chronic diseases and require multiple medications to address potential drug interactions. Such information would be beneficial to all primary care practitioners.

Research.

- Future research should focus on how to develop or amend existing STI Clinical Practice Guidelines to include middle-aged and older women.
- While research has focused on adolescents and women of childbearing age, Aboriginal women are a diverse population group and primary health care professionals need to develop awareness, sensitivity and skills in order to deliver

culturally-safe care that includes the middle-aged and older women as well as the environments (urban, rural, and remote) in which the Aboriginal women live.

- Future research ought to examine the relationship characteristics of middle-aged women and older women and how this may impact risky behaviours, including the kinds of relationships women engage in midlife, the characteristics or power dynamics of these relationships, and how the relationships are impacted by women's risky behaviours.
- Future studies of the sexual attitudes and behaviours of middle-aged and older women ought to assess the relative effects of educational attainment, socioeconomic status, social network effects, and partner status.
- Funding support for future research and educational programs related to STIs in the 50 years and older adult population is needed in order to develop clinical practice guidelines for this age group.
- Relevant and current research should be translated into successful chlamydia screening programs.

Conclusion

Nurse Practitioners working in primary care are in a position to advocate for changes to how all primary health care providers provide care to women of all ages in rural and remote communities. The NP can positively influence these changes by providing care that is holistic, safe, non-judgmental, thorough, and culturally competent. It is important for NPs and all PCPs to recognize the context of women's lives, taking into account the age, associated chronic diseases, and social and community settings in which women live. As the

sexual health of women of all ages changes, so should the primary care practice of NPs and other primary health care provider.

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Appendix 1: Clinical Practice Guidelines Comparison Table

Organization	Population to be Screened	Frequency of Screening
Canadian Guidelines on Sexually Transmitted Infections: Chlamydial Infections (PHAC, 2010a)	<p>At risk groups: (sexually active females less than 25 years of age; sexually active men less than 25 years of age; all pregnant women at their first prenatal visit and third trimester)</p> <p>Risk factors include: sexual contact with a chlamydia infected person; new sexual partner or more than two sexual partners in the past year; previous history of STIs; vulnerable populations (i.e., injection drug users, incarcerated individuals, sex trade workers, street youth)</p>	<p>Per risk factors, otherwise not specified</p> <p>All pregnant women should have a test for cure 3–4 weeks post-treatment</p> <p>If erythromycin or amoxicillin has been used for lactating women, a test for cure should be performed 3–4 weeks post-treatment</p> <p>All partners/contacts in the last 60 days should be tested and treated. If there is no partner in the last 60 days, the last known partner should be tested and treated</p> <p>Repeat testing is recommended 6 months post-treatment, due to reinfection</p>
BC Guidelines: Sexually Transmitted Infections in Adolescents & Adults (BCCDC, 2007a)	<p>Refer to PHAC guidelines</p>	<p>Refer to PHAC guidelines</p>

Organization	Population to be Screened	Frequency of Screening
U.S. Preventative Services Task Force for STI Screening (Meyers et al., 2008)	<p>All sexually active < 24 years of age</p> <p>Women who engage in high-risk sexual behaviour, i.e., multiple current partners; a new sexual partner engaging in sexual intercourse while under the influence of alcohol or drugs; engaging in sexual intercourse for money</p> <p>Does not recommend screening women 25 years or older who do not engage in high-risk sexual behaviour</p> <p>Does not recommend STI screening for men who do not engage in high-risk sexual behaviour</p>	<p>Perform yearly</p> <p>USPSTF encourages physicians to use their clinical judgment to expand or limit routine screening based on the community and populations they serve</p>

Organization	Population to be Screened	Frequency of Screening
Centers for Disease Control and Prevention: Sexually Transmitted Diseases Treatment Guidelines: Chlamydial Infections 2010 (CDCP, 2010)	<p>All sexually active women < 25 years of age</p> <p>All pregnant women at first prenatal visit and third trimester</p> <p>Screening older women is warranted with risk factors i.e., new sex partner or multiple sex partners</p> <p>Sexually active men should only be considered in clinical settings with a high prevalence of chlamydia (i.e. adolescent clinics, correctional facilities, and STD clinics)</p>	<p>Annually</p>